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[6] Richards and Wadsworth, *J. Amer. Chem. Soc.*, **38**, 1659 (1916).

[7] Baxter and Grover, *J. Amer. Chem. Soc.*, **37**, 1027 (1915).

[8] Hönigschmid and St. Horovitz, *Sitz. k. Akad. Wiss., Wien*, **123**, IIa, 1 (2407) (Dec., 1914). He gives the name 'Uranblei' to this form of lead. The name is appropriate if, as seems probable, the substance may ultimately be traced back genetically to uranium, according to Boltwood's brilliant and well-supported hypothesis. Because the relation of this form of lead to radium is somewhat less remote than that to uranium, we used the term 'radiolead' for it in a previous paper; but this term has also been applied to Radium D and is, therefore, not distinctive. The time for a final nomenclature of these substances has probably not yet come, but the expression "isotopic lead," based upon Soddy's word 'isotope,' is certainly safe as applied to every substance fitting into this place in the Periodic System. We venture to suggest that the present permanent isotope of lead be called 'isolead,' because it is now by far the best known of these isotopes. If any other permanent leads are verified, they might be called 'meta' and 'para.' For the highly transitory isotopes these names would be inappropriate, since they do not resemble lead in one of its most characteristic properties, namely, permanence. These might be called 'pseudo-leads,' giving them Greek ordinal prefixes to distinguish between them. But we offer these suggestions without any desire to be insistent, and have not even adopted this nomenclature in the present paper. It may well be best to retain the present nomenclature, especially as regards the transitory isotopes.

[9] See Richards and Wadsworth, these PROCEEDINGS, **2**, 505 (1916).

ON SOME ANOMALIES IN GEOGRAPHIC DISTRIBUTION OF PACIFIC COAST MOLLUSCA

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The islands, usually called the Santa Barbara Islands, lie off the coast of southern California from 15 to 50 miles roughly parallel to the shore of the mainland, from which they are separated by a depth of about 400 fathoms. They range in latitude from 33° to 34°N. That they were formerly connected with the mainland seems probable from general considerations, as well as the fact that the fossil tooth of an elephant is reported to have been found on Santa Catalina.

As we go south we find other islands or banks farther off shore and separated from the mainland by an increasing depth averaging more than 1500 fathoms. The Cortez Bank lies about 120 geographical miles south of Santa Cruz Island of the Santa Barbara group, in latitude 32° 20′N. It is 80 miles west of the mainland and separated by a depth of 1090 fathoms.

Next comes Guadelupe Island in latitude 29° N., 200 miles south of the Santa Barbara islands and 150 westward from the nearest Lower California mainland, from which it is separated by a depth of 1500 fathoms.

Six hundred miles south of Guadelupe is Socorro Island and its neighbors, forming the group of the Revillagigedo Islands. It is 330 miles west of the Mexican mainland in latitude 18° 50′ N., separated by a depth of about 1500 fathoms.

In a general way the sea near the coast of the mainland, west of the edge of the continental shelf, is considerably deeper than it is a relatively short distance seaward; that is to say a sort of trough in the sea-bottom lies near and roughly parallel with the mainshore, for a distance of nearly 1000 miles. The soundings are not numerous enough to warrant a more definite statement, but are sufficient to indicate the above generalization.

Investigations into the distribution of the Molluscan faunas of the Pacific coast of the Americas have been carried on for many years by the writer and are gradually reaching a point where positive conclusions can be drawn. We find, for instance, the Panamic or tropical fauna extending from Point Aguja on the Peruvian coast to Cape St. Lucas and the Gulf of California, and on the western shore of the peninsula of Lower California to Cerros Island, and thence (gradually diluted by the Californian fauna) as far as Point Conception, which however is reached by extremely few of the really tropical species.

There is a certain number of littoral mollusks which live only in shallow water near the tidal boundaries and hence are more subject to the influences of climate than those species which inhabit deeper water. Their limits of distribution are strongly marked.

Now it is a fact that many of these littoral species belonging to the Northern or Oregonian fauna actually reach the island of Guadelupe though stopping far short of it on the coast of the mainland.

More surprising still, we find a number of these northern species living on the island of Socorro, where the normal fauna should be wholly tropical: while on Clarion Island in nearly the same latitude and 220 miles west of Socorro there is Indo-Pacific tropical fauna with conspicuous species like *Voluta deshayesii.*

Socorro has, as far as we know, a strictly American tropical fauna with little Indo-Pacific adulteration, though it is 110 miles nearer to Clarion Island than to the American mainland. The other islands of the Revillagigedo group have not been visited by a collector.

Work has not gone far enough to enable a complete list of the northern species now living on Socorro Island, Latitude 18° 20′ N., to be made, but the following species are included in it.

Mytilus californianus Conrad. Southernmost reported locality on mainland in latitude 24° 40′ N., Magdalena Bay, Lower California.

Pachydesma stultorum Mawe. Southernmost mainland locality latitude 21° 36′ N., San Blas, Mexico.

Protothaca staminea Conrad. Southernmost mainland locality latitude 24° 40′ N., Magdalena Bay, Lower California.

Pholadidea sagitta Stearns. Southernmost mainland locality latitude 32° 24′ N., San Diego Bay, California.

There are also several gastropods, but on none of the islands cited has an exhaustive collection been made, so that a complete list is still a desideratum.

Mr. W. H. Ochsner, naturalist of the Galapagos Expedition of the California Academy of Sciences was the first to discover and collect from fossiliferous sedimentary strata on those islands.

In the case of the recent fauna of Socorro Island, we have at least four characteristically Californian species surviving on the island from 200 to 844 geographical miles south of their southernmost known extension on the mainland.

As the distances are calculated only from the difference in latitude and in geographical miles, while the coast line trends in a southeasterly direction, the actual distances are very considerably larger.

What explanation can be offered of these remarkable anomalies? The facts here presented, with others not yet fully worked out, have led to the framing of the following hypothesis.

Suppose the islands and banks here briefly referred to are the remnants of a peninsula or chain of islands once existing, parallel to the present peninsula of Lower California and connected to the mainland of southern California. During the existence of this peninsula, the cold current down the coast which now gives rise to fogs as far south as Cerros Island, in Pleistocene time, especially during the Glacial Epoch, might have carried its normal fauna far to the southward; this peninsula at the same time protecting from the cold current the waters, normally warm, of the sea between it and Lower California as well as of the Gulf of California, so that the tropical fauna might creep up to the extreme northern limit of these enclosed waters.

With the subsidence of the water barrier most of the northern fauna would have perished, but on the undrowned peaks a few of the more adaptable of the northern forms might have been able to persist or have left their traces in the subsequently slightly elevated Pleistocene sediments.

Our present knowledge of the seabottom west of the inshore deep trough previously referred to, is insufficient to add support to this hypothesis, but the stupendous changes of elevation on the California coast in very late geological time (see *Proceedings U. S. National Museum,* **1**, 3, 1878) add a certain plausibility to it, taken in connection with the facts above recorded of the geographical distribution of the shore mollusca.

It should be noted that the Pleistocene fossils collected on the Galapagos Islands by Mr. Ochsner contain no traces of the northern fauna, though plainly of American derivation and with hardly any intrusion of Indo-Pacific forms. Also that the northern species mentioned appear in the Pleistocene and even older beds of the California coast from San Pedro to San Diego.

A somewhat analogous overlapping of faunas occurs on the southeastern coast of Alaska where a considerable number of boreal mollusks, as well as one of the Arctic hair seals, extend southward in the cold waters of the inland passages of the Alexander archipelago, following the low temperature of the water induced by the drainage from glaciers and the shadows of the highlands bordering these narrow passages which, with the prevalent fogs, cut off most of the sunlight. On the outer fringe of the archipelago where the more normal sea temperatures occur, numerous representatives of the Californian fauna find their way northward at least as far north as the latitude of Sitka, and very likely to Cross Sound.

SOME PSYCHO-PHYSIOLOGICAL PROCESSES AS AFFECTED BY ALCOHOL

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The difficulty of adequately measuring the effects of small amounts of ethyl alcohol upon the human organism is indicated by the number of investigators who have worked in this field, by the variety of methods that have been employed, and more especially by the contradictions in the results. It is impossible to harmonize the published data because of the many and unknown variables. If two investigators would independently employ the same apparatus, methods, doses, subjects, and general conditions, the two sets of results would be comparable and seemingly of unique importance. It is the object of this paper to report a comparison of measurements made under such conditions.

Subsequent to the experimentation which is the basis of the extended report by Dodge and Benedict[1] arrangements were made with one of their normal group (Number VI) for a second series of measurements.